

## CLAIMS

1. A polypeptide comprising an amino acid sequence selected from the amino acid sequences represented by any one of SEQ ID NOS:10 to 16.

2. A polypeptide comprising an amino acid sequence in which at least one amino acid has been deleted, substituted or added in an amino acid sequence selected from the amino acid sequences represented by any one of SEQ ID NOS:14 to 16 and is capable of binding to JNK3.

3. A DNA which encodes the polypeptide of claim 1 or 2.

4. A DNA comprising a nucleotide sequence selected from the nucleotide sequences represented by any one of SEQ ID NOS:2 to 8.

5. A DNA which hybridizes with a DNA comprising the nucleotide sequence represented by any one of SEQ ID NOS:6 to 8 under stringent conditions, and encodes a polypeptide capable of binding to JNK3.

6. A recombinant DNA obtained by inserting the DNA of any one of claims 3 to 5 into a vector.

7. The recombinant DNA according to claim 6, which is a recombinant DNA selected from plasmid pCDNA3-S-JSAP1b, plasmid pCDNA3-S-JSAP1c, plasmid pCDNA3-S-JSAP4, plasmid pGAD10-JSAP5, and plasmid pCDNA3-His-S-JSAP5.

8. A transformant comprising the recombinant DNA of claim 6 or 7.

9. The transformant according to claim 8, which is a transformant selected from a microorganism, an animal cell, a plant cell, and an insect cell.

10. The transformant according to claim 9, which is a microorganism belonging to the genus *Escherichia*.

11. The transformant according to claim 10, wherein the microorganism belonging to the genus *Escherichia* is a microorganism selected from *Escherichia coli* JSAP1b/pCDNA3 (FERM BP-6567), *Escherichia coli* JSAP1c/pCDNA3 (FERM BP-6568), *Escherichia coli* JSAP4/pCDNA3 (FERM BP-6569), *Escherichia coli* JSAP5/pGAD10 (FERM BP-6570), and *Escherichia coli* JSAP5/pCDNA3 (FERM BP-6928).

12. A method for producing the polypeptide of claim 1 or 2, comprising culturing the transformant of any

one of claims 8 to 11 in a medium to produce and accumulate the polypeptide of claim 1 or 2 in the culture, and recovering the polypeptide from the culture.

13. An oligonucleotide which is selected from an oligonucleotide comprising a sequence identical to continuous 5 to 60 bases in a nucleotide sequence in any one of the DNA's of claims 3 to 5 and the DNA comprising the nucleotide sequence represented by SEQ ID NO:5, an oligonucleotide comprising a sequence complementary to the oligonucleotide, and an oligonucleotide analogue of these oligonucleotides.

14. The oligonucleotide according to claim 13, wherein the oligonucleotide analogue is selected from oligonucleotide analogues in which: a phosphodiester bond is converted into a phosphorothioate bond, a phosphodiester bond is converted into an N3'-P5' phosphoamidate bond, a ribose-phosphodiester bond is converted into a peptide-nucleic acid bond, uracil is substituted with C-5 propynyluracil, uracil is substituted with C-5 thiazoleuracil, cytosine is substituted with C-5 propynylcytosine, cytosine is substituted with phenoxazine-modified cytosine, ribose is substituted with 2'-O-propylribose, and ribose is substituted with 2'-methoxyethoxyribose.

15. A method for detecting mRNA encoding the polypeptide of claim 1 or 2, comprising using the oligonucleotide of claim 13 or 14.

16. A method for inhibiting expression of the polypeptide of claim 1 or 2, comprising using the oligonucleotide of claim 13 or 14.

17. An antibody which recognizes the polypeptide of claim 1 or 2.

18. A method for immunologically detecting the polypeptide of claim 1 or 2, comprising using the antibody of claim 17.

19. A method for immunohistologically staining of the polypeptide of claim 1 or 2, comprising using the antibody of claim 17.

20. An immunohistologically staining agent, comprising the antibody of claim 17.

21. A method of screening a compound having an inhibitory activity on binding of a polypeptide to JNK3, comprising bringing the polypeptide into contact with JNK3

and a test sample, said polypeptide comprising an amino acid sequence selected from the amino acid sequences represented by any one of SEQ ID NOS:9 to 16 or a polypeptide comprising an amino acid sequence in which at least one amino acid has been deleted, substituted or added in an amino acid sequence selected from the amino acid sequences represented by any one of SEQ ID NOS:9 to 16 and being capable of binding to JNK3.

22. A method of screening a compound having an inhibitory activity on phosphorylation of a polypeptide caused by activated JNK3, comprising bringing the polypeptide into contact with activated JNK3 and a test sample, said polypeptide comprising an amino acid sequence selected from the amino acid sequences represented by any one of SEQ ID NOS:9 to 16 or a polypeptide comprising an amino acid sequence in which at least one amino acid has been deleted, substituted or added in an amino acid sequence selected from the amino acid sequences represented by any one of SEQ ID NOS:9 to 16 and being capable of binding to JNK3.

23.. A compound obtained by the method of claim 21 or 22 or a pharmacologically acceptable salt thereof.

24. A method of screening a compound capable of changing expression of a gene encoding a polypeptide, comprising bringing a cell which expresses the polypeptide into contact with a test sample, said polypeptide comprising an amino acid sequence selected from the amino acid sequences represented by any one of SEQ ID NOS:9 to 16 or a polypeptide comprising an amino acid sequence in which at least one amino acid has been deleted, substituted or added in an amino acid sequence selected from the amino acid sequences represented by SEQ ID NOS:9 to 16 and being capable of binding to JNK3.

25. The method according to claim 24, wherein the expression of a gene is detected by the method of claim 15.

26. The method according to claim 24, wherein the polypeptide is detected using the method of claim 18.

27. A compound obtained by the method of any one of claims 24 to 26 or a pharmacologically acceptable salt thereof.

28. An inhibitor of binding of a polypeptide and JNK3, wherein the polypeptide comprises an amino acid sequence selected from the amino acid sequences represented by any one of SEQ ID NOS:9 to 16 or a polypeptide

comprising an amino acid sequence in which at least one amino acid has been deleted, substituted or added in an amino acid sequence selected from the amino acid sequences represented by any one of SEQ ID NOS:9 to 16 and being capable of binding to JNK3.

29. An inhibitor of phosphorylation of a polypeptide by activated JNK3, wherein the polypeptide comprises an amino acid sequence selected from the amino acid sequences represented by any one of SEQ ID NOS:9 to 16 or a polypeptide comprising an amino acid sequence in which at least one amino acid has been deleted, substituted or added in an amino acid sequence selected from the amino acid sequences represented by any one of SEQ ID NOS:9 to 16 and being capable of binding to JNK3.

30. An agent for preventing neurodegenerative diseases, such as Alzheimer's disease, Parkinson's disease, Huntington's disease, multiple sclerosis and the like, amyotrophic diseases, such as amyotrophic lateral sclerosis and the like, ischemic diseases, brain damage due to stroke, schizophrenia, depression, epilepsy, or various immunological and inflammatory diseases, comprising the polypeptide of claim 1 or 2.

31. An agent for treating neurodegenerative diseases, such as Alzheimer's disease, Parkinson's disease, Huntington's disease, multiple sclerosis and the like, amyotrophic diseases, such as amyotrophic lateral sclerosis and the like, ischemic diseases, brain damage due to stroke, schizophrenia, depression, epilepsy, or various immunological and inflammatory diseases, comprising the polypeptide of claim 1 or 2.

32. An agent for preventing neurodegenerative diseases, such as Alzheimer's disease, Parkinson's disease, Huntington's disease, multiple sclerosis and the like, amyotrophic diseases, such as amyotrophic lateral sclerosis and the like, ischemic diseases, brain damage due to stroke, schizophrenia, depression, epilepsy, or various immunological and inflammatory diseases, comprising the oligonucleotide of claim 13 or 14.

33. An agent for treating neurodegenerative diseases, such as Alzheimer's disease, Parkinson's disease, Huntington's disease, multiple sclerosis and the like, amyotrophic diseases, such as amyotrophic lateral sclerosis and the like, ischemic diseases, brain damage due to stroke, schizophrenia, depression, epilepsy, or various immunological and inflammatory diseases, comprising the oligonucleotide of claim 13 or 14.

34. An agent for preventing neurodegenerative diseases, such as Alzheimer's disease, Parkinson's disease, Huntington's disease, multiple sclerosis and the like, amyotrophic diseases, such as amyotrophic lateral sclerosis and the like, ischemic diseases, brain damage due to stroke, schizophrenia, depression, epilepsy, or various immunological and inflammatory diseases, comprising the antibody of claim 17.

35. An agent for treating neurodegenerative diseases, such as Alzheimer's disease, Parkinson's disease, Huntington's disease, multiple sclerosis and the like, amyotrophic diseases, such as amyotrophic lateral sclerosis and the like, ischemic diseases, brain damage due to stroke, schizophrenia, depression, epilepsy, or various immunological and inflammatory diseases, comprising the antibody of claim 17.

36. A promoter DNA which controls transcription of a gene encoding the polypeptide of claim 1 or 2.

37. A method of screening a compound capable of changing efficiency of transcription by the promoter DNA of 36, comprising bringing a test sample into contact with a transformant comprising a plasmid containing the promoter

DNA and a reporter gene connected to the downstream of the promoter DNA; and measuring a translation product content of the reporter gene.

38. The method according to claim 37, wherein the reporter gene is a gene selected from a chloramphenicol acetyltransferase gene, a  $\beta$ -galactosidase gene, a luciferase gene, and a green fluorescent protein gene.

39. A compound obtained by the method of claim 37 or 38 or a pharmacologically acceptable salt thereof.